

# **TOSS3 Migration + Virtual Office Hour**

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NASA Advanced Supercomputing Division

# TOSS3 Migration + Virtual Office Hour

## (TOSS3 = RHEL-based Tri-Lab Operating System Stack)



### ➤ Part 1: TOSS3 Migration Why?

- To better align with open-source development activities
- Streamline and reduce ongoing costs
- Facilitate interagency collaborative efforts in systems and application software

#### ■ Timeline of TOSS3 Migration

- Aug 10, 2021: General Announcement of planned migration to TOSS3
- Aug 20, 2021: Select early user testing
- Sep 17, 2021: Testing of TOSS3 open to all users
- Dec 20, 2021: TOSS3 becomes default OS for new job submissions
- Jan 25, 2022: SLES12 OS no longer available

#### ■ Best Practices

- Use new module files
- If old executable won't run, recompile using new module files
- How to deal with missing libraries or incompatible libraries  
version `GLIBC\_2.18' not found (required by ....libstdc++.so.6)

#### ■ Pain points

- Long stalls when job starts up
- MPI\_LAUNCH\_TIMEOUT errors

### ➤ Part 2: Virtual Office Hour

# Best Practices



- Use newer modules:
  - comp-intel/2018.3.222 or comp-intel/2020.4.304
  - mpi-hpe/mpt or mpi-hpe/mpt.2.25
- Use “module avail” for a list of all supported modules
- If the library is missing, check in pkgsrc
  - for example: module help pkgsrc/2021Q2
- If libstdc++.so.6 library version incompatibility is found, the typical messages are:  
XXX: /lib64/libc.so.6: version `GLIBC\_2.18' not found (required by ...../libstdc++.so.6)  
or  
/lib64/libstdc++.so.6: version `CXXABI\_1.3.8' not found  
/lib64/libstdc++.so.6: version `GLIBCXX\_3.4.20' not found

Solution: module load gcc

- \* for the first case, the new libstdc++.so.6 from gcc only requires GLIBC up to 2.17
- \* for the second case, the new libstdc++.so.6 provides updated versions of CXXABI and GLIBCXX

# Pain Points

- Long stalls when job starts up
  - job enters 'R' state but elapsed time is still '--'
  - most likely due to nodes provisioning (i.e., rebooting into requested OS)
  - run: `ssh pbspl1 tracejob jobid` (to see the why the job hasn't started)
  - should abate once all nodes are booted into TOSS3
- Typical `MPI_LAUNCH_TIMEOUT` message at `mpiexec` start-up:

MPT: Launcher network accept (`MPI_LAUNCH_TIMEOUT`) timed out

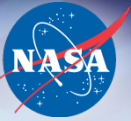
MPT: Launcher on r423i0n6 failed to receive connection(s) from: r431i1n12,...

MPT ERROR: could not launch executable

## Workarounds:

- increase setting of `MPI_LAUNCH_TIMEOUT` to 40 (seconds) Default: 20 seconds
- `#PBS -l site=needed=/home5+/nobackupp11+/nobackupp16`
- `/u/scicon/tools/bin/several_tries mpiexec -np ...`





# Questions?

Suggestions for future webinar topics are welcome